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ABSTRACT

A content analysis was performed to determine the trends and issues in educational technology for the period from October 1, 1988, through September 30, 1989. Sources for the analysis included four leading professional journals in educational technology, papers given at annual conventions of three professional associations, dissertations from five universities that have a high level of doctoral productivity, and the educational technology documents that have been entered in the ERIC database. The analysis was complemented by the examination of supplementary documents to determine the political, social, and economic reasons for the findings. This digest features the top trends and selected issues identified in the study. Trends reflect: (1) a concern for the design and development of instructional products and procedures; (2) an increasingly important role for evaluation in the instructional development process; (3) an increasing use of research and development to solve current teaching and learning problems; (4) the presence of computers in almost all public schools in the United States; (5) the wide acceptance of interactive video as a research and development product but not in schools and higher education; (6) the establishment of distance education as a major vehicle of instruction at all levels of education and training; (7) a preoccupation among practitioners with professional education in the field; and (8) a concern for the impact of technology on society at large. (13 references) (GL)

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TRENDS AND ISSUES IN EDUCATIONAL TECHNOLOGY: 1989

This digest is based on **Trends and Issues in Educational Technology 1989**, by Donald P. Ely, available from the ERIC Clearinghouse on Information Resources.

A content analysis was performed to determine the trends and issues in the field of educational technology for the period from October 1, 1988 through September 30, 1989. Sources for the analysis included four leading professional journals in educational technology; papers given at annual conventions of three professional associations; dissertations from five universities that have a high level of doctoral productivity; and the educational technology documents that have been entered into the ERIC database. The analysis was complemented by the examination of supplementary documents to determine the political, social, and economic reasons for the findings.

This digest features the top trends and selected issues identified in the study. For a full discussion of the study methodology and findings, the reader is referred to the source noted above.

TREND: Concern for design and development of instructional products and procedures dominates the professional literature.

Design and development are concerned with several subtopics: needs assessment, task analysis, learner characteristics, message design, product development, and motivational strategies. Instructional design focuses on the product itself and the lesson is the unit of analysis; instructional development is broader and usually deals with the course as the unit of analysis. From both perspectives, the medium is usually secondary to goals, objectives, and context of use. The increasing recognition of the importance of instructional material design and the strategies used to deliver information is reflected in a swing away from the preoccupation with hardware toward a concern for the systematic development of software. Much of the literature emphasized the design of interactive, multimedia products using new tools such as HyperCard (Apple Computer's hypermedia product).

Issue:

- How can instructional materials be designed to help learners use higher order thinking skills?

TREND: Evaluation is becoming an integral part of the instructional design and development process.

Evaluation seems to be emerging as a distinct area within instructional design and development and has established itself within the field of educational technology. Seventy-four percent of the professional academic programs now include courses in evaluation as part of the curriculum (Johnson, 1989). Evaluation can be subdivided into at least four areas: product evaluation, process evaluation, cost-effectiveness, and formative evaluation. Among the year's articles and conference papers dealing with evaluation, product evaluation was the most popular topic. Most frequently this discussed the effectiveness of computer programs used in schools and colleges.

Issue:

- Should evaluation competencies be developed independently of design and development competencies (i.e., is evaluation separate or integral in the process of instructional design and development)?

TREND: There is increasing use of research and development knowledge to solve current problems of teaching and learning.

Much of the year's literature consisted of summaries of research and development findings, meta-analyses of research in specific areas, and reports of case studies. This reflects a growing recognition of existing work as useful for current efforts. When existing knowledge is synthesized it often becomes more useful than separate and isolated facts, and when successful programs are publicized, they are more likely to be adopted. The use of educational technology principles and practices in teaching and learning is the focus of 40 out of the 250 approved programs listed in the 1989 National Diffusion Network catalog, *Programs That Work*. The Southeastern Educational Improvement Laboratory's *Tapping the Potential of Educational Technology* lists 105 technology-oriented projects.

Issue:

- To what extent are existing research findings and case study results applicable in new settings?

TREND: Computers can be found in almost every public school in the United States.

Quality Education Data (1989) reports that 76,395 of the 79,693 public schools in the United States (over 95%) have two or more microcomputers. When the total number of microcomputers is calculated, there are 1,596,715 units, or an average of 19.8 units per school and an average microdensity of 25.4 students per microcomputer. In addition, an *Electronic Learning* (1989) survey of state education agencies revealed that 77% of the states are planning new, technology-related programs, and 93% of the states provide in-service computer education for certified teachers. While the momentum for computer use in education is accelerating, the need to move beyond "computer literacy" training and integrate computers more fully in the teaching and learning process is receiving attention.

Issue:

- How can computer-assisted instruction be integrated into the curriculum?

TREND: Interactive video is widely accepted as a research and development product, but not in schools and higher education.

In 1989 there were three times as many articles in the interactive video category as there were in 1988. This reflects growth in the production and use of all forms of laser discs. For Education, it is clear that interactive video is still in its infancy and not ready for wholesale adoption. The *potential* of interactive video, especially for distance education, is recognized by educational technologists and educational leaders alike, and pilot programs are being reported in the literature. However, only a small number of schools have videodisc systems, and it is likely that relatively few of these are being used interactively.

Issue:

- Can interactive video be justified as a cost-effective teaching tool?

TREND: Distance education has become established as a major vehicle for instruction at all levels of education and training.

Distance education is prominent in the educational technology literature. While the organization and management of distance education encompasses much more than delivery systems, it is the delivery systems that bring distance education into the realm of educational technology. It is possible that educational technology may be redefined by distance education. The design and development of courseware is critical for learners who are working independent of face-to-face contact with a teacher. Like educational technology, distance education uses a full spectrum of media resources to deliver content, requires a management system that tracks each student, and has a major evaluation component with feedback mechanisms.

Issue:

- Which face-to-face instructional functions can effectively be replaced by distance education materials?

TREND: The definition, conduct, and status of professional education in the field continues to preoccupy practitioners.

Like professionals in any field, educational technologists ask questions about their changing roles and responsibilities; they worry about the education of future professionals and the upgrading of current practitioners; they look for recognition, especially from external colleagues; and they try to identify leadership from among their ranks. Conferences frequently serve as a forum for the expression of these concerns, many of which are generated in academic settings. The Professors of Instructional Design and Technology (PIDT) conference focused on four major themes which are consistent with much of the literature: (1) redefining the field; (2) improving graduate studies; (3) conducting research; and (4) identifying the role of educational technologists outside academic programs (Klein, 1989).

Issue:

- What changes are necessary in the programs to prepare professionals for service in the field of educational technology in light of the many technological changes that have occurred recently?

TREND: The impact of technology on individuals in the society at large continues to be considered by educational technology professionals.

People within the field of educational technology are asking questions about the consequences of their efforts on individuals who use the products and systems created by educational technology procedures. The effect of commercial television on young children continues to be explored and debated. The most recent analysis is an OERI publication, *The Impact on Children's Education: Television's Influence on Cognitive Development* (Anderson & Collins, 1988). The authors conclude that while research is sparse, there is no evidence that television has a mesmerizing effect on children's attention caused by color, movement, and visual changes; that children get overstimulated by television; or that television viewing displaces valuable cognitive activities.

Issue:

- How can learners of all ages be taught critical viewing and listening skills?

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